February 16, 1888.

Professor G. G. STOKES, D.C.L., President, in the Chair.

The Presents received were laid on the table, and thanks ordered for them.

The following Papers were read:—

I. "Note on the Changes effected by Digestion on Fibrinogen and Fibrin." By L. C. WOOLDRIDGE, M.D., D.Sc., Assistant Physician to Guy's Hospital. Communicated by Professor VICTOR HORSLEY, F.R.S. (From the Laboratory of the Brown Institution.) Received January 27, 1888.

Fibrinogen is a name conveniently given to a group of proteïd substances which can all be converted under certain conditions into fibrin. They exist in blood plasma (in traces in certain kinds of blood serum), and they can be prepared from almost all animal tissues (thymus, testis, brain, liver, kidney, stroma of red corpuscles, &c.).

They differ slightly in their behaviour towards various reagents, but they have a number of characters in common. They are all extremely easily changed by precipitation. In their normal condition they are easily soluble in water ("soluble" as caseïn is dissolved in milk). They are readily precipitated by acetic acid in excess, and dilute mineral acids in slight excess. If more dilute acid be added they are re-dissolved.*

On adding pepsin to the acid solution and maintaining the mixture at a temperature of 37° for some hours, a very marked precipitate makes its appearance. This precipitate is not dissolved if the artificial digestion be continued for many days. Freshly formed, it is easily soluble in dilute alkalis, but not in dilute acids. It dissolves in strong nitric acid, giving a yellow or yellowish-green solution, which gives a marked xanthoproteic reaction on warming and adding ammonia. On incinerating it leaves a markedly acid ash. If it be burnt with a little soda and saltpetre the ash is found to be extremely rich in phosphoric acid.

The phosphorus is present in the form of lecithin.

The alcoholic extract of even very small quantities of the precipitate contains relatively very large quantities of lecithin.

After complete extraction with alcohol there is either no phosphorus

* It is to be noted that fibrinogens are easily changed in this respect by precipitation.

at all in the ash, or a very dubious trace, due probably to imperfect extraction.

The ash always contains iron, and the iron is not removed from the precipitate by extraction with alcohol containing hydrochloric acid. This description applies equally to the fibrinogen obtained from the tissues and the fibrinogens present in blood.*

Under appropriate conditions these fibrinogens can be entirely converted into fibrin. The fibrin always contains lecithin; but fibrin differs from the fibrinogens from which it is formed by being absolutely and entirely soluble in artificial gastric juice. This remarkable difference in the behaviour of the two classes of substances towards artificial gastric juice is considered by the author as strong evidence that the relation between the lecithin and the proteïd which both bodies contain must be different in the two cases.

That lecithin was a very important factor in coagulation was shown by the author many years ago, and this fact has been fully confirmed by pupils of Alexander Schmidt (Nauck, Samson-Himmelstjerna, Krüger).

Ordinary fibrin obtained by whipping blood always leaves an undigested residue, due partly to the presence of admixed white corpuscles (Hammarsten), partly, however, to its containing unchanged fibrinogen. Fibrin obtained from pure fibrinogen fluids by artificially induced coagulation is always completely digestible if care be taken that it contains no unchanged fibrinogen. The fibrin obtained by the action of ferment on fibrinogen is always completely digestible (Hammarsten).

II. "A new Method for determining the Number of Micro-organisms in Air." By Professor CARNELLEY, D.Sc., and THOS. WILSON, University College, Dundee. Communicated by Sir HENRY ROSCOE, F.R.S. Received February 3, 1888.

(Abstract.)

This is a modification of Hesse's well-known process. It consists essentially in the substitution of a flat-bottomed conical flask for a Hesse's tube. Its chief advantages are:—(1.) Much smaller cost of flask and fittings as compared with Hesse's tubes; (2.) Very many fewer breakages during sterilisation; (3.) Great economy in jelly; (4.) Freedom from leakage during sterilisation; (5.) Results not vitiated by aërial currents.

* The presence of iron in an organic form in blood plasma was described by the author in the Arris and Gale Lectures, delivered before the Royal College of Surgeons in 1886. Pamphlet, 1886.